

We claim:

1. A process for preparing essentially uncrosslinked  
5 hyperbranched, water-soluble or water-dispersible polyesters  
by reacting
  - at least one dicarboxylic acid or a dicarboxylic acid  
derivative (A) with
  - 10 • at least one polyether polyol (B) having  $n$  OH groups,  
where  $n$  is  $\geq 3$ ,

at from  $40^{\circ}\text{C}$  to  $160^{\circ}\text{C}$  in the presence of an esterification  
catalyst, where the components (A) and (B) are used in such  
15 amounts that the molar ratio of OH groups to COOH groups is  
from 2 : 1 to 1 : 2.
2. A process as claimed in claim 1, wherein  $n$  is 3, 4, 5 or 6.
- 20 3. A process as claimed in claim 1, wherein  $n$  is 3 or 4.
4. A process as claimed in any of claims 1 to 3, wherein the  
molar ratio of OH groups to COOH groups is from 1.8 : 1 to  
1 : 1.8.
- 25 5. A process as claimed in any of claims 1 to 3, wherein the  
molar ratio of OH groups to COOH groups is from 1.5 : 1 to  
1 : 1.5.
- 30 6. A process as claimed in any of claims 1 to 5, wherein the  
reaction is carried out under reduced pressure.
7. A process as claimed in claim 6, wherein the pressure is less  
than 500 mbar.
- 35 8. A process as claimed in any of claims 1 to 7, wherein the  
polyether polyol having at least 3 OH groups is obtainable by  
ethoxylation and/or propoxylation of a molecule having at  
least 3 acidic H atoms.
- 40 9. A process as claimed in claim 8, wherein an ethoxylation is  
carried out.

10. A process as claimed in any of claims 1 to 9, wherein a diol is additionally used as chain extender (V) in an amount of not more than 40 mol% based on the amount of polyether polyols used.
- 5 11. A process as claimed in claim 10, wherein the amount of the chain extender (V) is not more than 20 mol%.
- 10 12. A process as claimed in any of claims 1 to 11, wherein a monofunctional carboxylic acid or a monofunctional alcohol is additionally used as chain stopper (S) in an amount of not more than 10 mol% based on the amount of polyether polyols (B) or dicarboxylic acids (A) used.
- 15 13. A process as claimed in claim 12, wherein the amount of the chain stopper (S) is not more than 5 mol%.
- 20 14. A process as claimed in any of claims 1 to 13, wherein the hyperbranched, water-soluble or water-dispersible polyester obtained is reacted in an additional process step with a suitable functionalization reagent (F) which can react with the OH and/or COOH end groups of the polyester.
- 25 15. A process as claimed in claim 14, wherein the functionalization reagent (F) comprises one or more compounds selected from the group consisting of aliphatic and aromatic monocarboxylic acids and their derivatives, aliphatic and aromatic unsaturated monocarboxylic acids and their derivatives, aliphatic and aromatic monoalcohols, aliphatic and aromatic unsaturated monoalcohols, aliphatic and aromatic monoamines, aliphatic and aromatic unsaturated monoamines, aromatic and aliphatic monoisocyanates, aliphatic and aromatic unsaturated monoisocyanates, compounds containing carbodiimide groups and compounds containing epoxide groups.
- 30 35 16. A process as claimed in any of claims 1 to 15, wherein the esterification catalyst is an enzyme and the polymerization is carried out at from 40°C to 120°C in the presence of a solvent.
- 40 17. A process as claimed in claim 16, wherein the polymerization is carried out at from 50°C to 80°C.
- 45 18. A process as claimed in claim 16 or 17, wherein the enzyme is a lipase or an esterase.

19. A process as claimed in claim 18, wherein the enzyme is *Candida antarctica* lipase B.
20. A process as claimed in any of claims 16 to 19, wherein the enzyme is used in immobilized form.
21. A process as claimed in any of claims 1 to 15, wherein the esterification catalyst is an acidic inorganic, organometallic or organic catalyst.
22. A process as claimed in claim 21, wherein the reaction is carried out at from 60°C to 160°C.
23. A process as claimed in claim 22, wherein the reaction is carried out at from 80°C to 150°C.
24. A process as claimed in any of claims 21 to 23, wherein the reaction is carried out at a pressure of not more than 100 mbar.
25. A water-soluble or water-dispersible, hyperbranched polyester obtainable by a process as claimed in any of claims 1 to 24.
26. A water-soluble or water-dispersible, hyperbranched polyester which has a hydroxyl number of 50 – 1000 mg KOH/g, an acid number of 0 – 200 mg KOH/g, a number average molecular weight  $M_n$  of 300 – 15 000 g/mol and a polydispersity  $M_w / M_n$  of 1.1 – 50 and is obtainable by a process as claimed in any of claims 1 to 24.
27. A water-soluble or water-dispersible, hyperbranched polyester as claimed in claim 26 which has a hydroxyl number of 100 – 800 mg KOH/g, an acid number of 1 – 100 mg KOH/g, a number average molecular weight  $M_n$  of 500 – 8000 g/mol and a polydispersity  $M_w / M_n$  of 1.2 – 20.
28. The use of a water-soluble or water-dispersible hyperbranched polyester as claimed in any of claims 25 to 27 for preparing polyaddition or polycondensation polymers.
29. The use of a water-soluble or water-dispersible hyperbranched polyester as claimed in any of claims 25 to 27 for producing printing inks, adhesives, coatings, paints and varnishes.